# Speeds and Feeds

## HSAM2 End Mills With Chip Breaker

| Material | | | Recommended Cutting Values (inch) - Slotting | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Group | | Material Description | Width of Cut, ae | Depth of Cut, ap (Maximum) | Parameter | Cutting Diameter (in) | | | | |
| ISO | VDI 3323 | | | | | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 |
| N | 21 | Aluminum-wrought alloy | 1.0D | 1.0D | Vc, SFM | 1600 | 1600 | 1600 | 1600 | 1600 |
| | | | | | Fz, IPT | .0030 | .0045 | .0060 | .0066 | .0075 |
| | | | | | n, RPM | 24450 | 16300 | 12220 | 9780 | 8150 |
| | | | | | Vf, IPM | 220 | 220 | 220 | 194 | 184 |
| | 22 | | 1.0D | 1.0D | Vc, SFM | 1600 | 1600 | 1600 | 1600 | 1600 |
| | | | | | Fz, IPT | .0030 | .0045 | .0060 | .0066 | .0075 |
| | | | | | n, RPM | 24450 | 16300 | 12220 | 9780 | 8150 |
| | | | | | Vf, IPM | 220 | 220 | 220 | 194 | 184 |
| | 23 | Aluminum-cast, alloyed | 1.0D | 1.0D | Vc, SFM | 600 | 600 | 600 | 600 | 600 |
| | | | | | Fz, IPT | .0030 | .0045 | .0060 | .0066 | .0075 |
| | | | | | n, RPM | 9170 | 6110 | 4580 | 3670 | 3060 |
| | | | | | Vf, IPM | 83 | 83 | 83 | 73 | 69 |
| | 24 | | 1.0D | 1.0D | Vc, SFM | 600 | 600 | 600 | 600 | 600 |
| | | | | | Fz, IPT | .0030 | .0045 | .0060 | .0066 | .0075 |
| | | | | | n, RPM | 9170 | 6110 | 4580 | 3670 | 3060 |
| | | | | | Vf, IPM | 83 | 83 | 83 | 73 | 69 |
| | 25 | | 1.0D | 1.0D | Vc, SFM | 600 | 600 | 600 | 600 | 600 |
| | | | | | Fz, IPT | .0030 | .0045 | .0060 | .0066 | .0075 |
| | | | | | n, RPM | 9170 | 6110 | 4580 | 3670 | 3060 |
| | | | | | Vf, IPM | 83 | 83 | 83 | 73 | 69 |
| | 26 | Copper and Copper Alloys (Bronze / Brass) | 1.0D | 1.0D | Vc, SFM | 880 | 880 | 880 | 880 | 880 |
| | | | | | Fz, IPT | .0020 | .0040 | .0050 | .0055 | .0060 |
| | | | | | n, RPM | 13450 | 8960 | 6720 | 5380 | 4480 |
| | | | | | Vf, IPM | 81 | 108 | 101 | 89 | 81 |
| | 27 | | 1.0D | 1.0D | Vc, SFM | 880 | 880 | 880 | 880 | 880 |
| | | | | | Fz, IPT | .0020 | .0040 | .0050 | .0055 | .0060 |
| | | | | | n, RPM | 13450 | 8960 | 6720 | 5380 | 4480 |
| | | | | | Vf, IPM | 81 | 108 | 101 | 89 | 81 |
| | 28 | | 1.0D | 1.0D | Vc, SFM | 880 | 880 | 880 | 880 | 880 |
| | | | | | Fz, IPT | .0020 | .0040 | .0050 | .0055 | .0060 |
| | | | | | n, RPM | 13450 | 8960 | 6720 | 5380 | 4480 |
| | | | | | Vf, IPM | 81 | 108 | 101 | 89 | 81 |
| | 29.1 | Non Metallic Materials | 1.0D | 1.0D | Vc, SFM | 1650 | 1650 | 1650 | 1650 | 1650 |
| | | | | | Fz, IPT | .0040 | .0075 | .0100 | .0110 | .0120 |
| | | | | | n, RPM | 25210 | 16810 | 12610 | 10090 | 8400 |
| | | | | | Vf, IPM | 302 | 378 | 378 | 333 | 302 |

SFM = Surface feet per minute
IPT = Inches per tooth
RPM = Revolutions per minute
IPM = Inches per minute

Finish cuts should use reduced feed rate and 0.02xD radial width of cut.

Reduce feed rate and depth of cut by approximately 50% for long reach tools.

Speeds and feeds shown are based on rigid setup. Cut parameters may need to change on small-taper machines or less rigid setup.

# Speeds and Feeds

## HSAM2 End Mills With Chip Breaker

| Material | | | Recommended Cutting Values (inch) - Side Cutting | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Group | | Material Description | Width of Cut, ae (Recommended Max.) | Depth of Cut, ap (Maximum) | Parameter | Cutting Diameter (in) | | | | |
| ISO | VDI 3323 | | | | | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 |
| N | 21 | Aluminum-wrought alloy | 0.5D | 1.5D | Vc, SFM | 2000 | 2000 | 2000 | 2000 | 2000 |
| | | | | | Fz, IPT | .0030 | .0045 | .0060 | .0066 | .0075 |
| | | | | | n, RPM | 30560 | 20370 | 15280 | 12220 | 10190 |
| | | | | | Vf, IPM | 275 | 275 | 275 | 242 | 229 |
| | 22 | | 0.5D | 1.5D | Vc, SFM | 2000 | 2000 | 2000 | 2000 | 2000 |
| | | | | | Fz, IPT | .0030 | .0045 | .0060 | .0066 | .0075 |
| | | | | | n, RPM | 30560 | 20370 | 15280 | 12220 | 10190 |
| | | | | | Vf, IPM | 275 | 275 | 275 | 242 | 229 |
| | 23 | Aluminum-cast, alloyed | 0.5D | 1.5D | Vc, SFM | 800 | 800 | 800 | 800 | 800 |
| | | | | | Fz, IPT | .0030 | .0045 | .0060 | .0066 | .0075 |
| | | | | | n, RPM | 12220 | 8150 | 6110 | 4890 | 4080 |
| | | | | | Vf, IPM | 110 | 110 | 110 | 97 | 92 |
| | 24 | | 0.5D | 1.5D | Vc, SFM | 800 | 800 | 800 | 800 | 800 |
| | | | | | Fz, IPT | .0030 | .0045 | .0060 | .0066 | .0075 |
| | | | | | n, RPM | 12220 | 8150 | 6110 | 4890 | 4080 |
| | | | | | Vf, IPM | 110 | 110 | 110 | 97 | 92 |
| | 25 | | 0.5D | 1.5D | Vc, SFM | 800 | 800 | 800 | 800 | 800 |
| | | | | | Fz, IPT | .0030 | .0045 | .0060 | .0066 | .0075 |
| | | | | | n, RPM | 12220 | 8150 | 6110 | 4890 | 4080 |
| | | | | | Vf, IPM | 110 | 110 | 110 | 97 | 92 |
| | 26 | Copper and Copper Alloys (Bronze / Brass) | 0.5D | 1.5D | Vc, SFM | 1150 | 1150 | 1150 | 1150 | 1150 |
| | | | | | Fz, IPT | .0020 | .0040 | .0050 | .0055 | .0060 |
| | | | | | n, RPM | 17570 | 11720 | 8790 | 7030 | 5860 |
| | | | | | Vf, IPM | 105 | 141 | 132 | 116 | 105 |
| | 27 | | 0.5D | 1.5D | Vc, SFM | 1150 | 1150 | 1150 | 1150 | 1150 |
| | | | | | Fz, IPT | .0020 | .0040 | .0050 | .0055 | .0060 |
| | | | | | n, RPM | 17570 | 11720 | 8790 | 7030 | 5860 |
| | | | | | Vf, IPM | 105 | 141 | 132 | 116 | 105 |
| | 28 | | 0.5D | 1.5D | Vc, SFM | 1150 | 1150 | 1150 | 1150 | 1150 |
| | | | | | Fz, IPT | .0020 | .0040 | .0050 | .0055 | .0060 |
| | | | | | n, RPM | 17570 | 11720 | 8790 | 7030 | 5860 |
| | | | | | Vf, IPM | 105 | 141 | 132 | 116 | 105 |
| | 29.1 | Non Metallic Materials | 0.5D | 1.5D | Vc, SFM | 2050 | 2050 | 2050 | 2050 | 2050 |
| | | | | | Fz, IPT | .0040 | .0075 | .0100 | .0110 | .0120 |
| | | | | | n, RPM | 31320 | 20880 | 15660 | 12530 | 10440 |
| | | | | | Vf, IPM | 376 | 470 | 470 | 413 | 376 |

SFM = Surface feet per minute
IPT = Inches per tooth
RPM = Revolutions per minute
IPM = Inches per minute

Finish cuts should use reduced feed rate and 0.02xD radial width of cut.

Reduce feed rate and depth of cut by approximately 50% for long reach tools.

Speeds and feeds shown are based on rigid setup. Cut parameters may need to change on small-taper machines or less rigid setup.



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